

FIELD GUIDEBOOK
to
ENVIRONMENTS OF COAL FORMATION
IN
SOUTHERN FLORIDA

Trip Leaders
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PRE-CONVENTION FIELDTRIP
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85.1 FLAMINGO MARINA - FIRST DAY'S TERMINATION STOP.

Leave boats and proceed on foot to motel. Obtain key to your room from "Housing Aide". Time of dinner and evening program to be announced.

SITES TO BE VISITED ON FIRST DAY

STOP 1: Visitor's Center, Everglades National Park.

Objectives of Stop:

- A. Presentation of geological and botanical setting in which the field trip will take place.
- B. Orientation for first day's travel.
- C. Rest Stop.

Discussion:

The Florida peninsula has been described as the emergent portion of a much larger extension of continental North America that is known as the Floridian Plateau (Vaughan, 1910; Parker and Cooke, 1944). Along the east coast of Florida, the Plateau extends only a few miles into the Atlantic Ocean. Along the west coast the Plateau extends for many miles under the Gulf of Mexico, hence, it is only a sector of the eastern portion of the Plateau that is above sea level at the present time. Tertiary and Quaternary formations compose the sub-surface strata in southern Florida (see Figure 1). The Eocene Ocala limestone crops out in central Florida and all overlying strata dip gently away from this area to the west, south and east (Parker and Cooke, 1944; Jones, et al., 1948). In the field trip area (see Trip Map No. 1) the northwest section is said to be underlain by the Miocene Tamiami formation and in the remainder of the area this rock unit is unconformably overlain by the Pleistocene Miami oolite (Parker, Ferguson, Love, et al., 1955). The boundary between these two rock units is represented as being more or less coincident with the course of the Shark River.

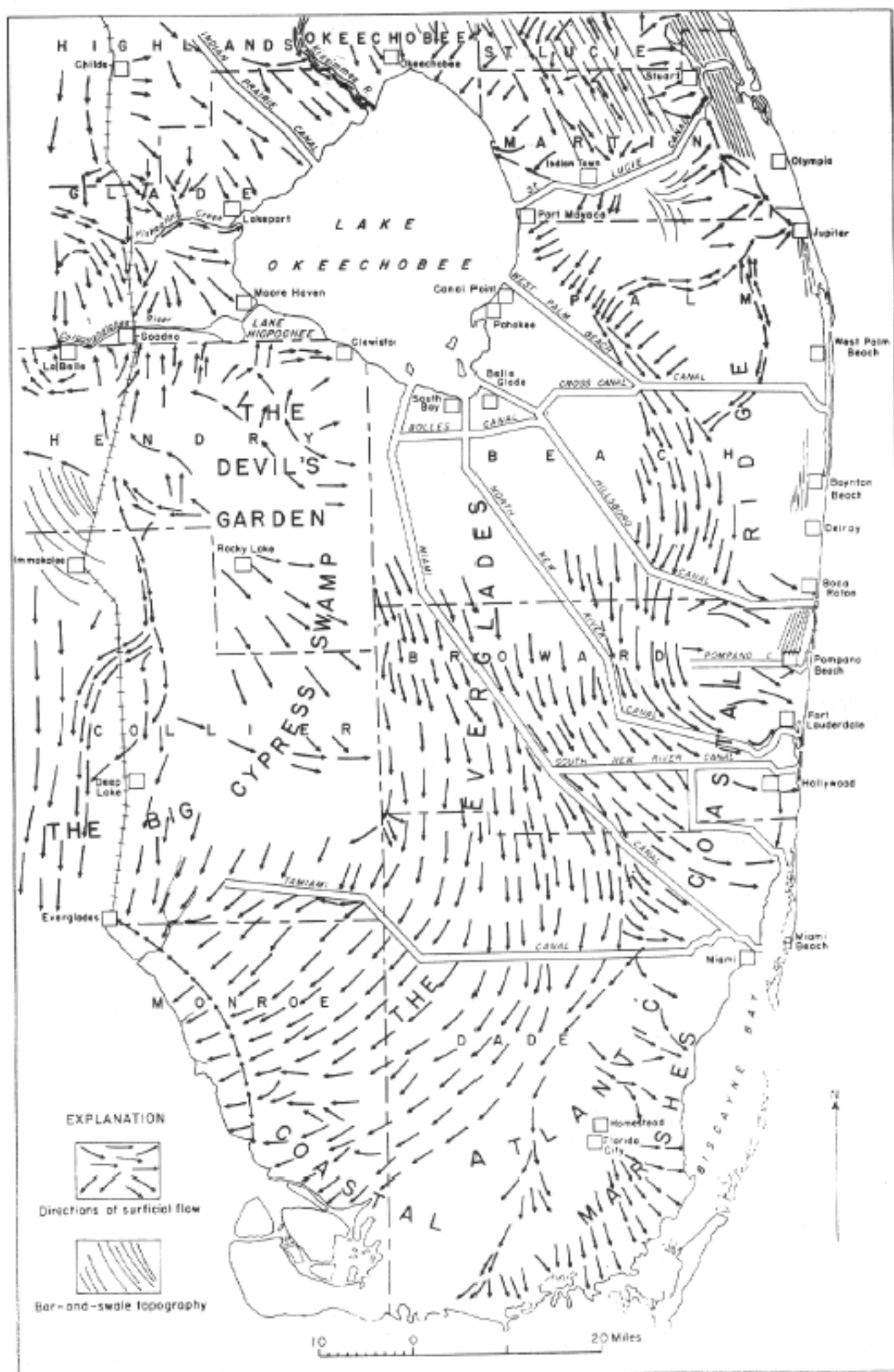
The Miami oolite is a soft, marine limestone that varies from relatively pure calcium carbonate to a sandy limestone. In some areas it

contains steeply dipping cross-bedded units that are truncated by shelly layers. In other areas it is massive and oolitic. The Tamiami formation is a calcareous sandstone or sandy limestone containing beds and pockets of quartz and sand (see Parker and Cooke 1944 and Parker, Ferguson, Love et al., 1955).

Topographically, southern Florida exhibits little relief. In the area south of Lake Okeechobee the surface is fifteen to thirty feet above sea level and it slopes gently to the south. The southward flowing drainage tends to be contained on the east by the slightly elevated Atlantic Coastal Ridge and on the west by the high land (10-15 feet) on which the Big Cypress Swamp is developed. In the broad expanse of some 4000 square miles between these two topographic highs, the Everglades attain their best development as a vast "river of grass". Near the southern tip of Florida the Atlantic Coastal Ridge swings inland and diverts the drainage to the southwest. Thus, in the field trip area, the surficial drainage is from the northeast (Figure 2). Topographically the subject area is generally less than one foot above sea level with a maximum height of five feet in Royal Palm Hammock.

In spite of its subdued character, the topography of south Florida plays a major role in determining the nature of the vegetative cover. The effect of topography is modified by the impact of overland flow of water from Lake Okeechobee southward and by the inland flow of tidal water along the coast. These three aspects of the physical environment appear to exert the major control over the distribution of the various plant communities.

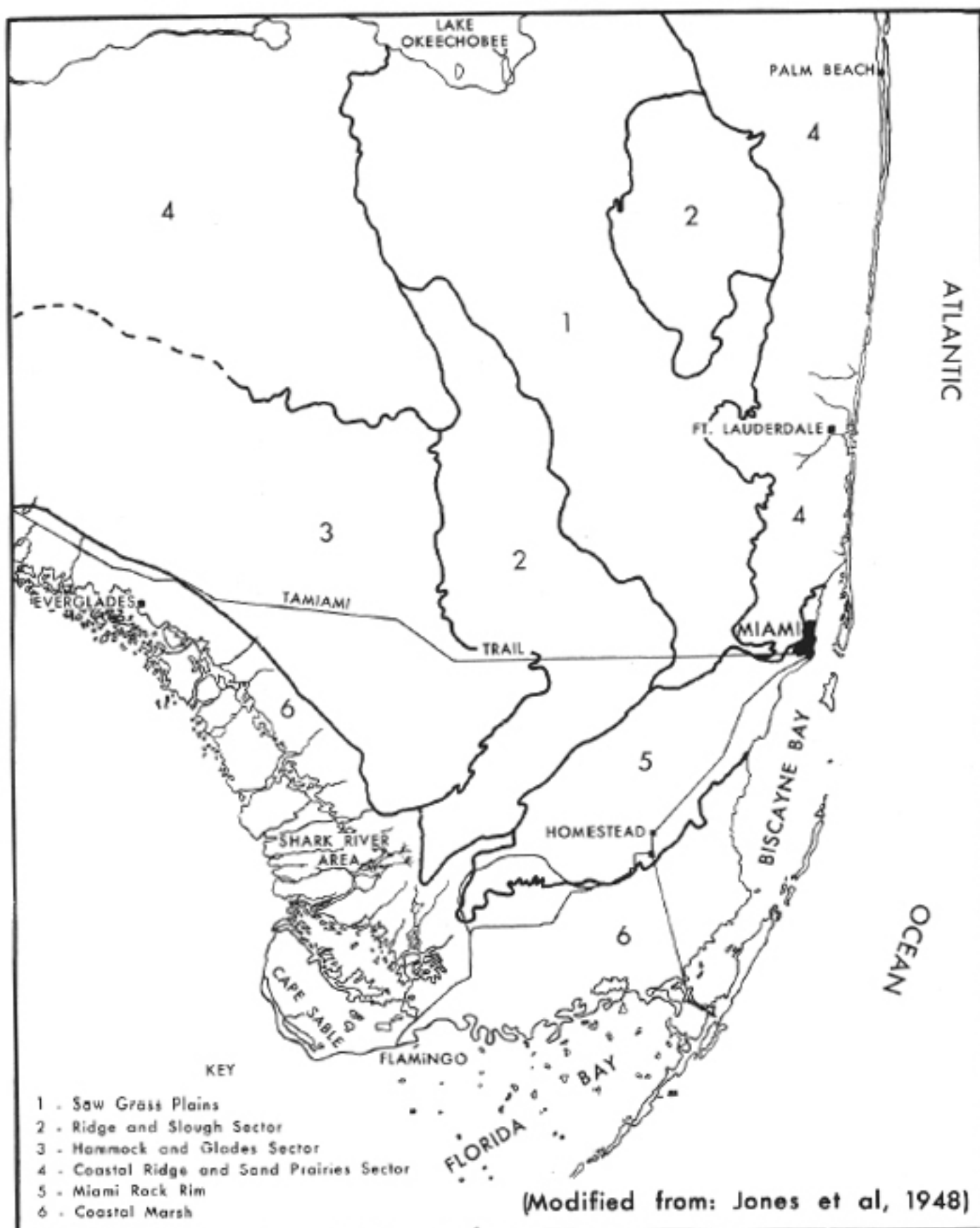
Jones et al. (1948) suggested that the area south of Lake Okeechobee consisted of six physiographic divisions: (1) the saw grass plains, (2) the ridge and slough sector, (3) the hammock and glades sector, (4) the coastal ridge and sand prairies sector, (5) the Miami rock rim, and (6) the coastal marsh. A slightly modified version of his "physiographic map" is presented as Figure 3. The vegetation associated with each of these areas has been described by Jones et al. (op. cit.), by Davis (1940, 1943), and more recently by Loveless (1959). From these descriptions it is clear that the plant communities involved vary from almost pure stands of single species to complex sub-tropical forests. Only four of the aforementioned physiographic units occur in the field trip area. These are the so-called



MAP OF SOUTHEASTERN FLORIDA, SHOWING DIRECTIONS OF
SURFICIAL DRAINAGE AND TRENDS OF BAR-AND-SWALE TOPOGRAPHY

(Taken from U.S.G.S. Water Supply Paper 1255)

FIGURE 2



PHYSIOGRAPHIC DIVISIONS OF THE EVERGLADES REGION
Figure 3

Coastal Marsh, the Hammock and Glades, the Ridge and Slough and the Miami Rock Rim. The "Coastal Marsh" is covered in much of the area by a well-developed mangrove forest. The Hammock and Glades and the Ridge and Slough are covered by a sedge marsh that is interrupted by "hammocks", "heads" or "tree islands" as they are variously called. These hammocks are covered either by cypress or by some hardwood complex. The western segments of the Miami Rock Rim are usually known as "Everglades Keys" and are commonly covered with a pine forest or by a hardwood-palm complex. As will be shown later, each of these areas includes several environments, each with its own distinctive vegetation but for present purposes it is sufficient to recognize that the coastal area in the vicinity of the Shark River is occupied by a mangrove forest that forms a continuous coastal fringe. This forest extends inland for eighteen or more miles along the water courses. In back of the mangrove fringe in this area is the remarkably different saw grass plain with its hammocks breaking the otherwise herbaceous cover and with the occasional pineland where the higher ground of the Miami Rock Rim invades the area.

The mangrove forest is well developed all along the southwestern coast of Florida but is particularly luxurious near the vicinity of Ponce de Leon Bay at the mouth of the Shark River. Here the red mangrove (Rhizophora mangle L.) and the black mangrove (Avicennia nitida Jacq.) are almost the sole constituents of the plant communities. They form dense stands of tall trees covering the mainland coast and the numerous coastal islands (Plate Ia). In contrast, the headwaters of the Shark River rise in the saw grass plains in a totally different environment, as shown in Plate Ib.

The headwater channels of the Shark River leave the open Everglades about 17 miles from the Gulf coast. Most of the "saw grass plain" in this area is dominated by Mariscus jamaicensis (Crantz) Britton, but locally this is displaced by concentrations of Eleocharis spp., Juncus spp., or Scirpus spp. "Tree islands" are as numerous and as well developed in the headwaters area as they are in the inland sectors of this vast "sea of grass".



a

VIEW OF THE MATURE MANGROVE FOREST
NEAR THE MOUTH OF THE SHARK RIVER



b

SAW GRASS COVERED EVERGLADES SHOWING
SEVERAL HAMMOCKS OR "TREE ISLANDS"

PLATE I